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JANUARY 25, 1957

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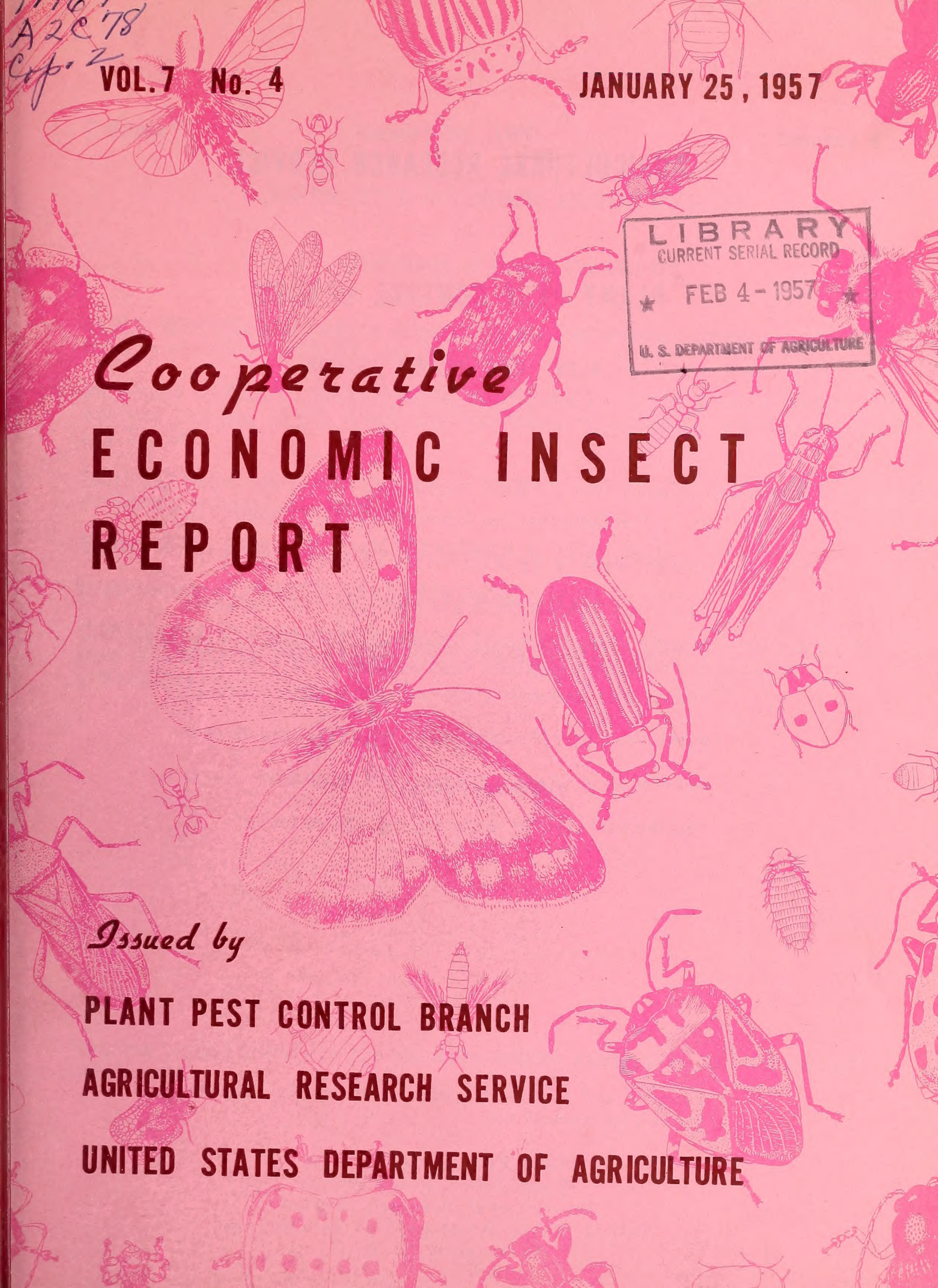

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Plant Pest Survey Section
Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 7 January 25, 1957 Number 4

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

BOLL WEEVIL hibernation counts in west Tennessee somewhat higher than in winter of 1955-56. (p. 56).

Summary of BEET LEAFHOPPER conditions in southern Idaho and eastern Oregon, 1956. Curly top conditions in southern Great Plains,1956. (pp. 58, 59).

Regional meetings to discuss major INSECT and PLANT DISEASE problems scheduled. (p. 60).

Status of the EUROPEAN CORN BORER in 1956. (p. 61).

Distribution of RANGE GRASSHOPPERS. (p. 71).

CORRECTION: CEIR 7(3):51 under Distribution of Range Grasshoppers, map 80 should be titled "Melanoplus packardii Scudder, Packard grasshopper".

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Reports in this issue are for the week ending January 18, unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK

Mid-January to Mid-February 1957

The Weather Bureau's 30-day outlook for the period from mid-January to mid-February calls for a continuation of below normal temperatures over most of the nation, with greatest departures in the Northeast. The only area where above normal averages are predicted is the Far Southwest.

Precipitation is expected to exceed normal along the Gulf Coast and east of the Appalachians, with frequent snows from the Carolinas northward. Greater than normal amounts are also anticipated in the Rocky Mountain States, while subnormal precipitation is indicated over the Mid-West. In areas not specified near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

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WEATHER OF THE WEEK ENDING JANUARY 21, 1957

Outbreaks of exceptionally cold Arctic air overspread most of the Nation early in the period. Although considerable warming was experienced after Friday, temperatures for the week averaged below normal in all sections with the exception of the Far Southwest and eastern North Dakota. Frontal activity on Saturday and Sunday brought heavy to moderate precipitation to Pacific coastal areas, northward above San Diego. Elsewhere, except for a few isolated locations in the East where amounts were moderate and in southern Arizona and New Mexico where no measurable precipitation was recorded, weekly accumulations were only light. Most of the eastern third of the country experienced the coldest weather of the season, with many record-breaking low temperatures in the Northeast. In New England this was reported as the coldest week in many years. Subzero temperatures were recorded as far south as northern Kansas and Missouri, and in the Ohio Valley. At Richmond, Virginia, a minimum of 0° was observed. Freezing temperatures extended well into Texas, except for the southern tip and into northern and central Florida, as well as far south in the other Gulf Coast States. The Northwest also experienced unseasonably cold temperatures this week. At Pendleton, Oregon, the average departures of -21° was equally as great as the one reported in the Northeast at Albany, New York. Excessive winds raised some dust in Utah, South Dakota, Oklahoma, and Kansas during the week with probably the most severe occurring in the central portion of the latter State. Here, on the 17th and 19th, visibilities were reduced to 1/16 to 1/4 mile as winds reached gusts of 50 m.p.h. The snow cover at lower elevations extended somewhat southward early in the period, but receded with the warming which took place over the weekend. As of Monday morning, the 1-inch line extended generally from southern South Dakota

Weather continued on p. 57

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) TEXAS - Light on wheat in Kaufman County (Hawkins) and light on some experimental plots of wheat in Brazos County (Futrell).

WINTER GRAIN MITE (Penthaleus major) TEXAS - Light, medium local infestations on oats in Kaufman County. (Hawkins).

SPOTTED ALFALFA APHID - ARIZONA - Increasing on alfalfa at Mesa, Maricopa County and probably throughout the Salt River Valley, Jan. 16. (Ariz. Coop. Rept.). TEXAS - Medium infestations on alfalfa in Rockwall, Kaufman and Red River Counties. (Hawkins, Herschler). VIRGINIA - None present in sweepings from Powhatan and Henrico Counties. (Rowell, Morris).

FRUIT INSECTS

MEXICAN FRUIT FLY (Anastrepha ludens) - CALIFORNIA - No flies captured during period. Riverside County transferred trapping operations to Coachella Valley with 46 traps in grapefruit groves. Trapping in several southern counties reduced or discontinued. Orange County servicing 96 traps and San Diego County 140. USDA is operating about 1500 traps along the border in San Diego County and resuming trapping in Imperial Valley with 75 traps. The State is operating 1100 traps in control area of San Ysidro. (Cal. Coop. Rept., Jan. 11).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Inspections of 25 city blocks in Madera, Madera County, where known infestations have been under eradication, showed no evidence of infestations. Twenty "buffer" blocks, also inspected, were negative. This is last infestations known in the State and is the final inspection following three years of treatment after finding live whitefly and three more years of inspection. (Cal. Coop. Rept., Jan. 11).

ORCHARD MITES - FLORIDA - Activity of Metatetranychus citri and Phyllocoptruta oleivora on citrus increased and further increase expected. (Pratt, Thompson, Johnson, Jan. 10).

DOGWOOD TWIG BORER (Oberea tripunctata) - TEXAS - Light infestation in a 50-acre peach orchard in Brazos County. (Turney, Jan. 11).

TRUCK CROP INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Populations remained dispersed due to lack of rainfall which has retarded germination of winter annuals. A local area in Los Banos Hills, Merced County, had sufficient leafhoppers on tar weed to justify spraying, and was sprayed with 98 percent kill. (Cal. Coop. Rept., Jan. 11).

DIAMONDBACK MOTH (Plutella maculipennis) - ARIZONA - Moderate infestation causing moderate damage on 20 acres of cabbage at Phoenix, Jan. 15. (Ariz. Coop. Rept.).

COTTON INSECTS

Boll Weevil Hibernation Counts, Tennessee, Fall, 1956: Trash examinations in McNairy County showed an average of 933 live weevils per acre, compared with 902 in fall, 1955. This is the largest number per acres since fall, 1952 when the average was 2259. The largest average count per acre was 4978. Based on number of weevils in hibernation, a rather heavy infestation can be expected in southern counties in 1957. Some weather has occurred which is favorable for killing weevils in hibernation. (Locke).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A SCALE (Matsucoccus sp.) - NEW HAMPSHIRE - Infestation discovered on white pine at Swanzey, Nov. 29, 1956. Det. H. Morrison. Species may be undescribed. Infestation associated with unusual amount of resinosis on infested trees but relationship, if any, undetermined. Additional collections made from widely-separated points in the State. In a number of instances, scales have been found embedded in the fungus Septobasidium pinicola and perhaps the scale can be found readily by locating this fungus. (Conklin).

A BUD MITE (Aceria paradianthi) - CALIFORNIA - Survey of 16 carnation plantings in San Mateo County, two were found infested. A heavy build up with severe injury in some spots with growers concerned. (Cal. Coop. Rept., Jan. 11).

A LEAF MINER (Liriomyza sp.) - CALIFORNIA - During a survey of carnation plantings in San Mateo County, infestations were found in 6 of 16 plantings. Populations light. (Cal. Coop. Rept., Jan. 11).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - FLORIDA - *Aedes sollicitans* biting at 12 per hour and averaging 30 percent of catch and *A. taeniorhynchus* biting at 28 per hour and averaging 70 percent of catch at Estero Island, Lee County, Jan. 12. (Mead).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - FLORIDA - Larvae averaging 11 per animal on cattle at Belle Glade, Palm Beach County. Of those inspected, 95 percent were infested, Jan. 2. (Denmark).

CATTLE LICE - UTAH - Problem on many farms and ranches in Cache and Box Elder Counties. (Knowlton).

BROWN DOG TICK (*Rhipicephalus sanguineus*) - ARIZONA - Heavy infestation reported in and around home in Tucson, Jan. 18. (Ariz. Coop. Rept.).

SHEEP SCAB MITE (*Psoroptes equi* var. *ovis*) - IOWA - Sheep scab caused by this mite has been identified in 20 Iowa flocks. These flocks have been placed under quarantine and dipped in BHC under supervision of the State Veterinarian's office. (Harris).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrotis ypsil.	Prod. ornith.	Feltia subt.	Laph. frug.	Perid. marg.
TEXAS						
Winter Haven 1/1-15*	55	31	47	29		18
Weslaco 1/1-15*	17	31	79	149	6	5
SOUTH CAROLINA (County)						
Oconee 1/5-11		2				3

*Also *Heliothis zea*: Winter Haven, 2; Weslaco, 54.

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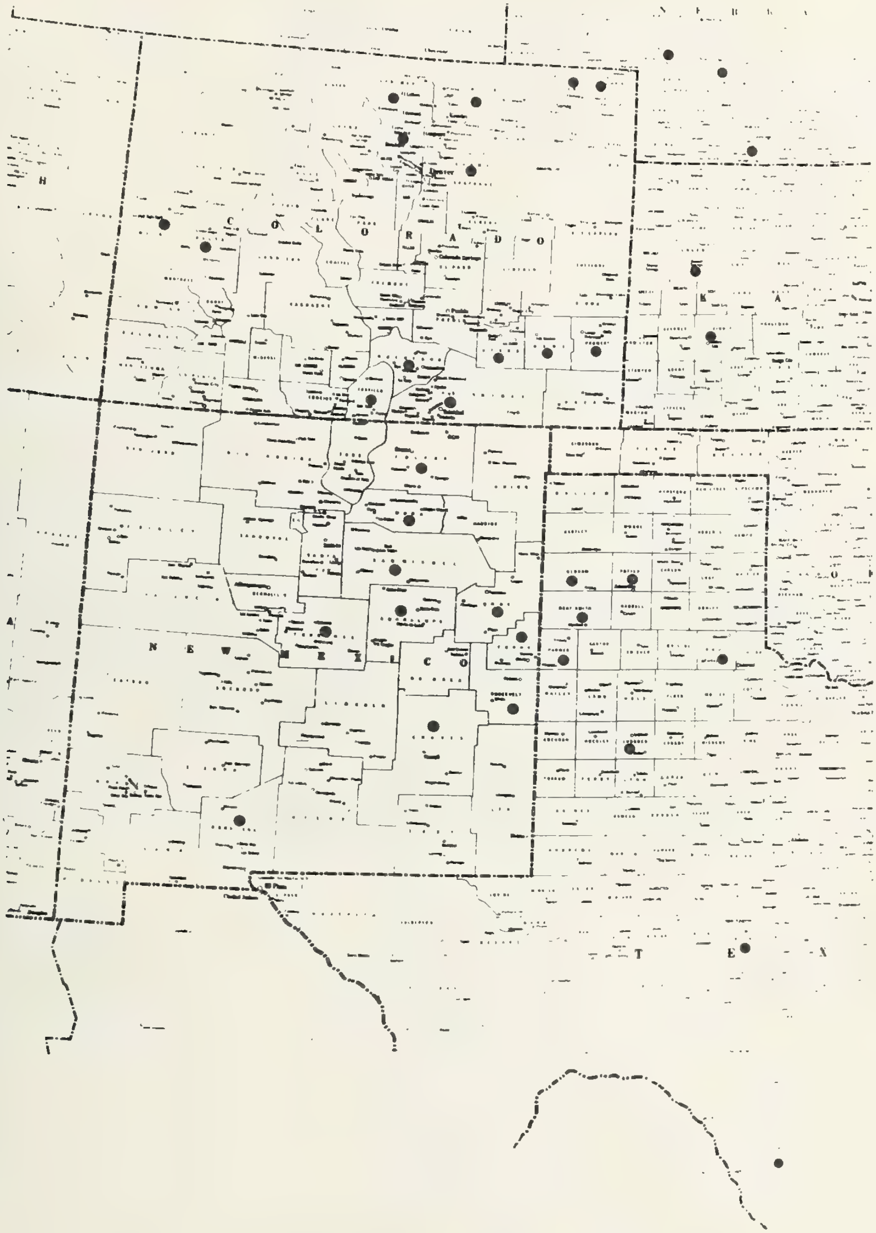
Weather continued from p. 54 through northern Ohio, into West Virginia and thence northeastward to southeastern New York. Depths range from 12 inches at Duluth, Minnesota to 42 inches at Houghton, Michigan, in the upper Lake region. In the East, 28 inches was observed at Millinocket, Maine, 23 inches at Somerset, Vermont, and 30 inches at Watertown, New York, while in the higher elevations of the West, measurements included 135 inches at Mt. Baker Lodge, Washington, 72 inches at Crater Lake, Oregon, 74 inches at Silver Lake, Utah, and 55 inches at Soda Springs, California. Ice measurements on the Missouri River this week are 22 and 18 inches at Bismarck and Williston, North Dakota, respectively. On the James River at Huron, South Dakota, the thickness is 14 inches. Other measurements include 20 inches at Lake Pepin in Minnesota on the Mississippi, 10 inches at Alpena, Michigan and 20 inches at Greenville, Maine. (Summary Supplied by U.S. Weather Bureau).

Summary of Beet Leafhopper Conditions in Southern Idaho and Eastern Oregon, 1956

Beet leafhopper (Circulifer tenellus) populations and the acreage of Russian-thistle in the fall of 1955 were approximately twice as large as in 1954, being the largest since 1949. A warm, dry October and a cold November delayed the germination of winter annual hosts until late in the fall. Therefore, the leafhoppers entered the winter under adverse conditions. Abnormally warm, unseasonably wet weather in December and January resulted in widespread and abundant germination and emergence of additional winter annual hosts over the lower Snake River Plains. Three periods of comparatively short duration of subzero temperatures occurred during the winter, but snow gave protection to the insect and hosts. Comparatively mild temperatures, with a precipitation deficiency were favorable for winter survival of this leafhopper and its hosts. Spring host plants were generally abundant and widely distributed over the lower Snake River Plains and were favorable for producing high populations of beet leafhoppers. Overwintered female populations in representative desert and cultivated spring breeding areas averaged 49 per 100 square feet of weed-host area, compared with an average of 31 for the past 15 years. The alternating cold and warm spring weather extended the development of the spring generation of beet leafhoppers, and as a result small nymphs and newly developed adults were present in most areas at the same time. In the most productive spring breeding areas, the peak of the first-generation nymphal population was reached on May 24, when an average of 102 per square foot of weed-host area was recorded, as compared with 188 nymphs on May 17, 1954, and on June 7, 1955. Spring-generation adults had reached maturity by May 20, 1956, as compared with May 10 and June 7 in 1954 and 1955. The initial movement of the spring-generation into beet fields was first noted on May 29 and reached a peak on June 28, when 233 migrant leafhoppers per 100 square-foot samples were recorded, compared with 678 for the 22-year period of 1935-56. Tests of overwintered leafhoppers collected in the breeding areas showed that 3.8 percent were viruliferous, with an average grade of severity of 1.4. Spring-generation leafhoppers from desert breeding areas showed 21.8 percent were viruliferous, with an average grade of severity of 2.1. Spring-generation leafhoppers from desert breeding areas showed 21.8 percent were viruliferous and the average grade of severity was 2.1. Readings of curly-top infection in commercial bean fields of south central Idaho showed an average of 2.6 percent of the snap beans grown for seed and 0.7 percent of Great Northern U. I. 123 dry field beans were infected with curly top. The acreage of summer breeding areas of Russian-thistle and the fall populations of beet leafhoppers in 1956 were the largest on record. General and widespread germination and emergence of winter annual host plants occurred over the lower Snake River Plains during the last half of October. Because the winter annuals were present before the summer hosts dried, the leafhoppers entered the fall of 1956 under favorable host-plant conditions. (J. R. Douglass).

CurlyTop Conditions in Southern Great Plains and Adjacent Areas - 1956

Beet leafhopper conditions in this area in February and March, 1956 were described in Cooperative Economic Insect Report, Vol. 6, No. 25, page 584. Based on these conditions a smaller number of leafhoppers was expected to move northward into Kansas and other States in 1956 than in 1955. Survey in August showed that curly top was well distributed (see map), but both incidence and severity of the disease were low. (Douglass, Peay).



County distribution of curly top in the southern Great Plains and adjacent areas in August 1956.

The following USDA press release, dated January 18, 1957, is being included because of its interest to entomologists, plant pathologists and related workers.

Regional Briefings Scheduled on Threat of Foreign Agricultural Pests

Agricultural workers throughout the country will have a chance during February to discuss major regional insect and plant-disease problems, with emphasis on pests of foreign origin, the U. S. Department of Agriculture announced today. "The increase in foreign trade and travel has brought increasing danger of the introduction into this country of foreign plant diseases and injurious insects, "says Administrator B. T. Shaw of USDA's Agricultural Research Service. "We need to take a good look at this potential threat to our agriculture. We need to review our regulatory and research activities to see what we have done and what we can do to protect our agriculture against plant pests already here or knocking at our door." The Agricultural Research Service is sponsoring meetings in each of the four National Plant Board regions, scheduled as follows:

Eastern: Rutgers University, New Brunswick, N. J., February 6-8.
Western: University of California, Berkeley, Calif., February 13-15.
Central: University of Minnesota, St. Paul, Minn., February 18-20.
Southern: Mississippi State College, State College, Miss., Feb. 25-27.

State agricultural officials are helping to plan the meeting programs. Entomologists, plant pathologists, nematologists, and State and USDA research and regulatory officials are expected to participate. Four major weapons wielded by Federal and State personnel against plant pests will come up for discussion. 1. Federal-State quarantines against importation and movement of insect- or disease-carrying products. 2. Plant-pest surveys, an increasingly efficient method for detecting first signs of an insect or plant disease new to a region or a country. 3. Research to help provide tools for control and eradication of pests that are now a problem and to keep ahead of possible future problems. 4. Federal-State programs for control and eradication of plant disease and insect pests of regional or national significance.

As in most scientific fields, pest-control and related research agencies need more trained personnel each year than they are able to recruit. Ways of interesting and training more young people in these fields is another of the problems to be discussed at the meetings. The Mediterranean fruit fly, khapra beetle, burrowing nematode, soybean cyst nematode, and the parasitic plant witchweed are among current plant-pest-control problems of national significance. Experts working on campaigns against these pests will discuss with agricultural officials the Federal-State organization that protects the Nation against such invaders. Research entomologists and pest control leaders believe that if cooperating agencies are prepared to operate efficiently in peacetime, only minor adjustments in the organization will be needed in time of national emergency. Details of programs to be presented may be obtained directly from the Dean of Agriculture at each of the land-grant colleges at which meetings are scheduled.

STATUS OF THE EUROPEAN CORN BORER IN 1956

Survey Data Provided by State Agricultural Agencies
Compiled and Summarized by
Leo G. K. Iverson
Plant Pest Control Branch, United
States Department of Agriculture

Agricultural agencies in 27 States reported on surveys conducted in their States to determine the abundance and distribution of the European corn borer (Pyrausta nubilalis) in 1956. All survey data, summaries or records of field observations were submitted to Central Plant Pest Control Regional office for processing. This report is a compilation of all information submitted by the State agencies.

Distribution

The European corn borer was known to occur in 37 States in 1956. In some States only a few counties are infested while in others the borers have been found in all counties. No additional States reported infestations in 1956. Several States reported new county records indicating this pest is continuing to spread. These were as follows: Alabama 1, Arkansas 7, Mississippi 28, South Dakota 1.

The area in the United States now known to be infested includes a total of 1,681 counties as shown on map 1.

Counties reported as infested for the first time in 1956 are as follows:

- Alabama
  - Winston
- Arkansas
  - Conway
  - Desha
  - Jefferson
  - Lonoke
  - Phillips
  - Prairie
- Mississippi
  - Benton
  - Bolivar
  - Calhoun
  - Carroll
  - Chickasaw
  - Clay
  - Coahoma
  - De Soto
  - Grenada
  - Itawamba
- Mississippi (Cont'd)
  - Lafayette
  - Lee
  - Leflore
  - Lowndes
  - Monroe
  - Montgomery
  - Oktibbeha
  - Pontotoc
  - Prentiss
  - Quitman
  - Sharkey
  - Sunflower
  - Tallahatchie
  - Tippah
  - Tishomingo
  - Union
  - Washington
  - Yalobusha
- South Dakota
  - Corson

Abundance

The 1956 corn borer abundance survey began in late August and continued through November. The survey is designed to measure the fall population of corn borer larvae. The participating States were encouraged to time the surveys to include a high percentage of mature larvae whenever possible. In all cases except for minor differences in compiling data, the accepted survey methods were used.

This year a majority of the States conducted surveys on a district rather than county basis. Since this change has occurred the charts and summaries will be shown as districts. In some instances a State will be considered as a single district for the purpose of this report. To compare population levels for the last two years it was necessary to recompute some of the 1955 data. Table 1 has been prepared on this basis.

Nearly all of the thirteen Eastern States(except Maryland and New Hampshire)recorded increases in borer populations in 1956. The average for this group of States rose from 75 borers per 100 stalks to 130 in 1956.

In the North Central States the overall population decreased from 173 borers per 100 plants in 1955 to 98 in 1956. In some instances less than half as many borers were recorded. Illinois dropped from an average of 285 borers per 100 stalks in 1955 to 127 in 1956. Indiana decreased from 172 to 97. Iowa continued to drop from 497 in 1954 to 351 in 1955 to 220 in 1956. Persistent drought is generally considered to have contributed toward the continued decline in corn borer populations in this area.

Surveys in Arkansas indicated this pest is continuing to increase and spread; of 69 fields examined 42 were infested. The range of infestation extended from a trace to 86 percent. Surveys in Oklahoma were reported by cooperators as being negative throughout the season.

In 1955 the corn borer was reported as a serious pest of pimento peppers in northern Alabama. During 1956 it was reported to have caused severe damage to potatoes near Weeksville and Bayboro, North Carolina. An unusual situation came to attention this past season when European corn borer larvae were found in potato tubers grown on Long Island, New York. Although the infestation was light, it was found generally in the area. Subsequent inspections in the field and packing sheds failed to disclose any infested tubers. During the short period of tuber infestations, Long Island potatoes moving for export were fumigated with methyl bromide.

For the entire area of the United States surveyed for European corn borer, based on district averages, the average number of borers per 100 plants decreased from 147 in 1955 to 105 in 1956.

A summary of the 1955 and 1956 surveys by States is given in table 1. The State summaries by districts are shown in table 2 and map 1. Map 2 is a shaded map portraying approximate population levels and map 3 has been prepared to show the infested area and counties reported as infested for the first time in 1956.

Table 1. Summary by States of European corn borer abundance in corn, fall of 1956, compared with data for 1955.

State	1955			1956			Districts Surveyed Both Years		
	Number of districts surveyed	Average number of borers per 100 plants	Counties represented	Number of districts surveyed	Average number of borers per 100 plants	Counties represented	Districts	Number of Borers per 100 Plants 1955	Number of Borers per 100 Plants 1956
Eastern United States									
Connecticut	2	34	7	2	55	7	2	34	55
Delaware	1	241	3	1	243	3	1	241	243
Maryland	1	140	23	1	80	23	1	140	80
Massachusetts	-	-	-	1	81	1	-	-	-
New Hampshire	1	25	8	1	22	9	1	25	22
New Jersey	1	177	12	1	365	12	1	177	365
New York	2	25	6	2	201	6	2	25	201
North Carolina	-	-	-	1	128	23.	-	-	-
Pennsylvania	9	54	42	9	106	42	9	54	106
Rhode Island	1	131	5	1	335	5	1	131	335
Vermont	1	3	14	1	5	14	1	3	5
Virginia	2	158	32	2	171	32	2	158	171
West Virginia	1	32	3	4	38	12	1	32	1
Total	22		155	27		189	22		
Average 1/								75	130
North Central States									
Illinois	9	285	80	9	127	80	9	285	127
Indiana	6	172	92	11	97	92	11 2/	172	97
Iowa	12	351	99	12	220	99	12	351	220
Kansas	3	24	27	3	31	27	3	24	93
Michigan	4	62	26	4	38	26	4	62	38
Minnesota	6	97	64	6	59	64	6	97	59
Missouri	3	132	32	4	90	49	1	118	226
Nebraska	4	171	50	5	147	64	4	171	162
North Dakota	5	47	19	4	44	14	4	57	44
Ohio	5	124	32	5	53	32	5	124	53
South Dakota	6	121	42	6	52	42	6	121	52
Wisconsin	8	82	61	8	23	61	8	82	23
Total	71		624	77		650	73		
Average 1/								173	98
United States									
Total	93		779	104		839	95		
Average 1/								147	105

1/ Weighed on basis of number of districts.

2/ Number of districts surveyed in 1956 represents same counties surveyed as six districts in 1955.

Table 2 -- European corn borer abundance in corn, fall of 1956, compared with data for 1955

State	Average number of borers per 100 plants	
	1955	1956
Connecticut (Agr. Expt. Sta.)		
District 1	4	33
District 2	65	77
State mean	34	55
Delaware (Agr. Expt. Sta.)		
Kent	279	187
New Castle	121	219
Sussex	323	323
State mean	241	243
Illinois (Agr. Expt. Sta.) Natural History Survey Div., Ext. Ser.		
Northwest	488	208
Northeast	413	141
West	306	184
Central	384	228
East	758	147
West Southwest	102	132
East Southeast	81	80
Southwest	20	26
Southeast	14	1
State mean	285	127
Indiana (Exp. Sta.)		
Northwest	-	149
North Central	-	100
Northeast	-	71
Northwest Central	-	130
Northeast Central	-	178
Central	-	114
Southwest Central	-	72
Southeast Central	-	117
Southwest	-	24
Indiana (cont'd)		
South Central	-	41
Southeast	-	70
State mean	172 1/	97
Iowa (State Dept. of Agr. and Agr. Expt. Sta.)		
District I	243	296
District II	376	252
District III	194	68
District IV	278	236
District V	210	314
District VI	485	173
District VII	169	162
District VIII	413	248
District IX	689	332
District X	202	185
District XI	465	193
District XII	488	175
State mean	351	220
Kansas (Ins. Sur.)		
North Central	3	2
Northeast	40	69
East Central	30	22
State mean	24	31

1/ Based on 6 districts, new arrangement of districts in 1956 does not correspond to those used in 1955.

Table 2 -- (Cont'd)

State	Average number of borers per 100 plants	
	1955	1956
Maryland (Agr. Expt. Sta.) Ext. Ser.		
Allegany	39	13
Anne Arundel	45	24
Baltimore	81	71
Calvert	66	37
Caroline	554	151
Carroll	53	123
Cecil	93	49
Charles	88	50
Dorchester	362	166
Frederick	42	43
Garrett	39	11
Harford	71	64
Howard	60	51
Kent	68	41
Montgomery	35	40
Prince Georges	74	31
Queen Annes	174	72
St. Mary's	167	95
Somerset	97	94
Talbot	199	59
Washington	141	106
Wicomico	553	155
Worcester	117	302
State mean	140	80
Massachusetts (Exp. Sta.)		
Franklin	-	81
State mean	-	81
Michigan (Ext. Ser.)		
District I	36	18
District II	34	18
District III	102	32
District IV	74	84
State mean	62	38
Minnesota (State Dept. of Agr.)		
West Central	108	49
Central	84	33
East Central	22	30
Southwest	216	95
South Central	109	121
Southeast	45	26
State mean	97	59
Missouri (Ext. Ser.) Ins. Sur.		
Northern	157	-
Central	120	-
Southeast	118	-
Northwest	-	67
West Central	-	20
Northeast	-	46
Southeast	-	226
State mean	132	90
Nebraska (Agr. Expt. Sta.) Ins. Sur.		
Northeast	255	255
East Central	148	158
Central	181	187
Southeast	99	50
South Central	-	83
State mean	171	147
New Hampshire (State Dept. of Agr.)		
Belknap	31	16
Carroll	30	59
Cheshire	-	6

Table 2 -- (Cont'd)

State	Average number of borers per 100 plants	
	1955	1956
New Hampshire (Cont'd)		
Grafton	9	13
Hillsboro	22	7
Merrimack	48	39
Rockingham	23	15
Strafford	5	32
Sullivan	29	15
State mean	25	22
New Jersey (State Dept. of Agr. and Ext. Ser.)		
Burlington	197	609
Camden	367	226
Cumberland	75	154
Gloucester	223	374
Hunterdon	92	204
Mercer	394	690
Middlesex	250	567
Monmouth	242	597
Salem	94	127
Somerset	117	695
Sussex	38	74
Warren	31	67
State mean	177	365
New York (Ext. Serv.)		
West Central		
Monroe	4	12
Onondaga	4	34
Ontario	5	1
Orleans	7	11
Steuben	3	60
Average	5	24
Suffolk	127	1089
State mean comparable counties (6)	25	201

State	Average number of borers per 100 plants	
	1955	1956
North Carolina (Ext. Ser. Div. Biol. Sc.)		
Eastern	no survey	128
State mean	-	128 1/
North Dakota (Ext. Ser. & Dept. of Agr. & Labor)		
District I	69	38
District II	136	52
District III	17	60
District IV	6	-
District V	6	29
State mean	47	44
Ohio (Agr. Expt. Sta. & Ext. Ser.)		
Northwest	153	63
West Central	134	48
Central	82	50
Southwest	90	48
Northeast	-	44
State mean	124	53

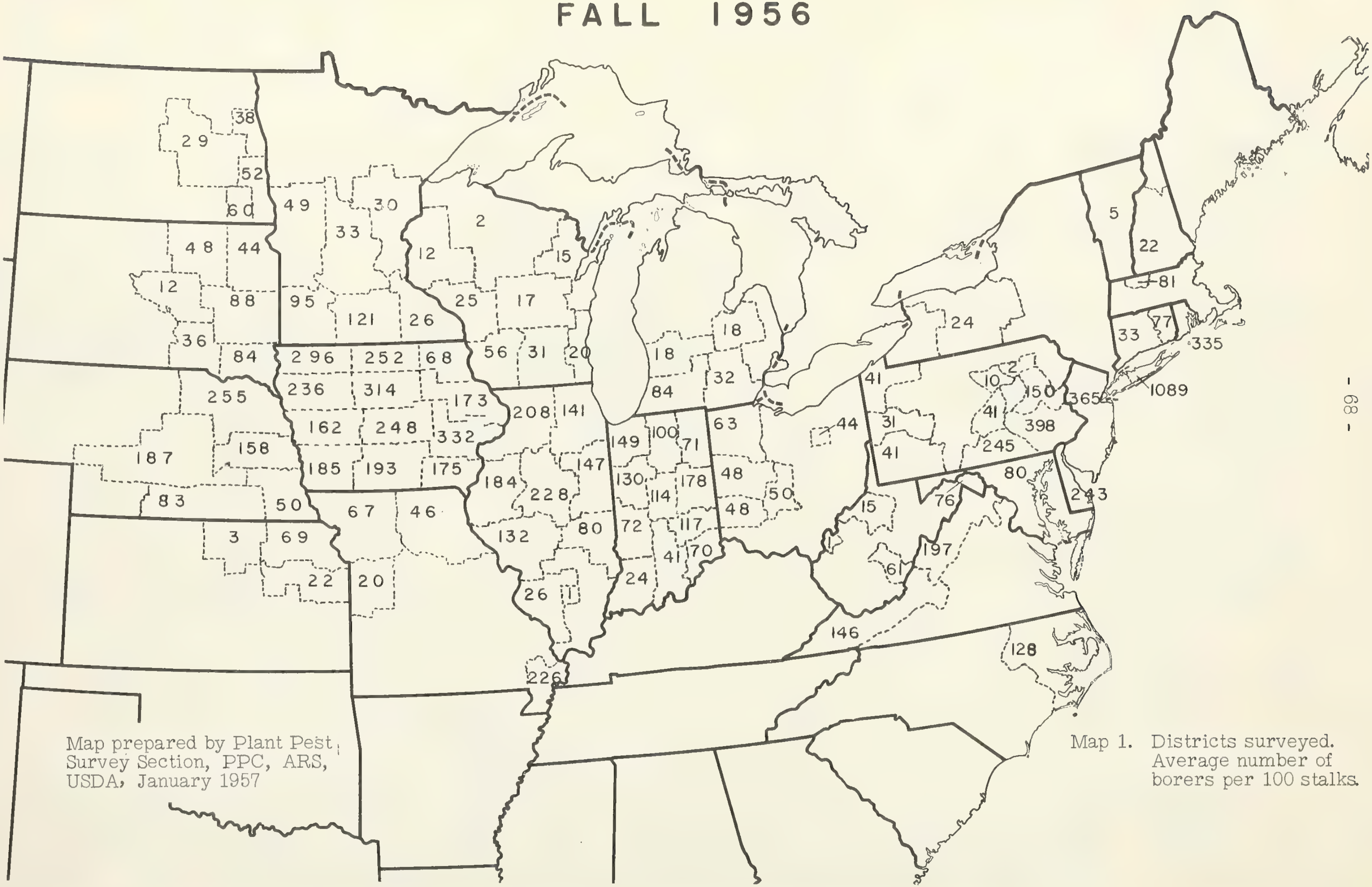
1/ Represents 23 counties

Table 2 -- (Cont'd)

State	Average number of borers per 100 plants	
	1955	1956
Pennsylvania (State Dept. of Agr.)		
Northwest	54	41
North	3	10
Northeast	10	2
West	76	31
Central	64	41
East	23	150
Southwest	70	41
South	85	245
Southeast	107	398
State mean	54	106
Rhode Island (Agr. Exp. Sta.)		
Bristol	267	267
Kent	150	622
Newport	88	335
Providence	112	100
Washington	38	355
State mean	131	335
South Dakota (Agr. Expt. Sta. Ext. Ser.)		
North Central	97	48
Northeast	108	44
Central	63	12
East Central	117	88
South Central	103	36
Southeast	241	84
State mean	121	52
Vermont (State Dept. Agr.)		
Addison	12	2
Bennington	9	34
Caledonia	1	4
Vermont (Cont'd)		
Chittenden	4	1
Essex	1	3
Franklin	2	7
Grand Isle	4	2
Lamoille	3	6
Orange	0	3
Orleans	0	3
Rutland	2	1
Washington	Trace	3
Windham	2	4
Windsor	5	3
State mean	3	5
Virginia (Ins. Sur.)		
Northern Va.	207	197
S. W. Virginia	108	146
State mean	158	171
West Virginia (Exp. Sta.)		
District I	no survey	76
District II	no survey	15
District III	no survey	61
District IV	32	1
State mean	32	38
Wisconsin (State Dept. of Agr.)		
Northwest	50	12
North Central	9	2
Northeast	36	15
West Central	108	25
Central	73	17
Southwest	162	56
South Central	151	31
Southeast	64	20
State mean	82	23

EUROPEAN CORN BORER ABUNDANCE

FALL 1956

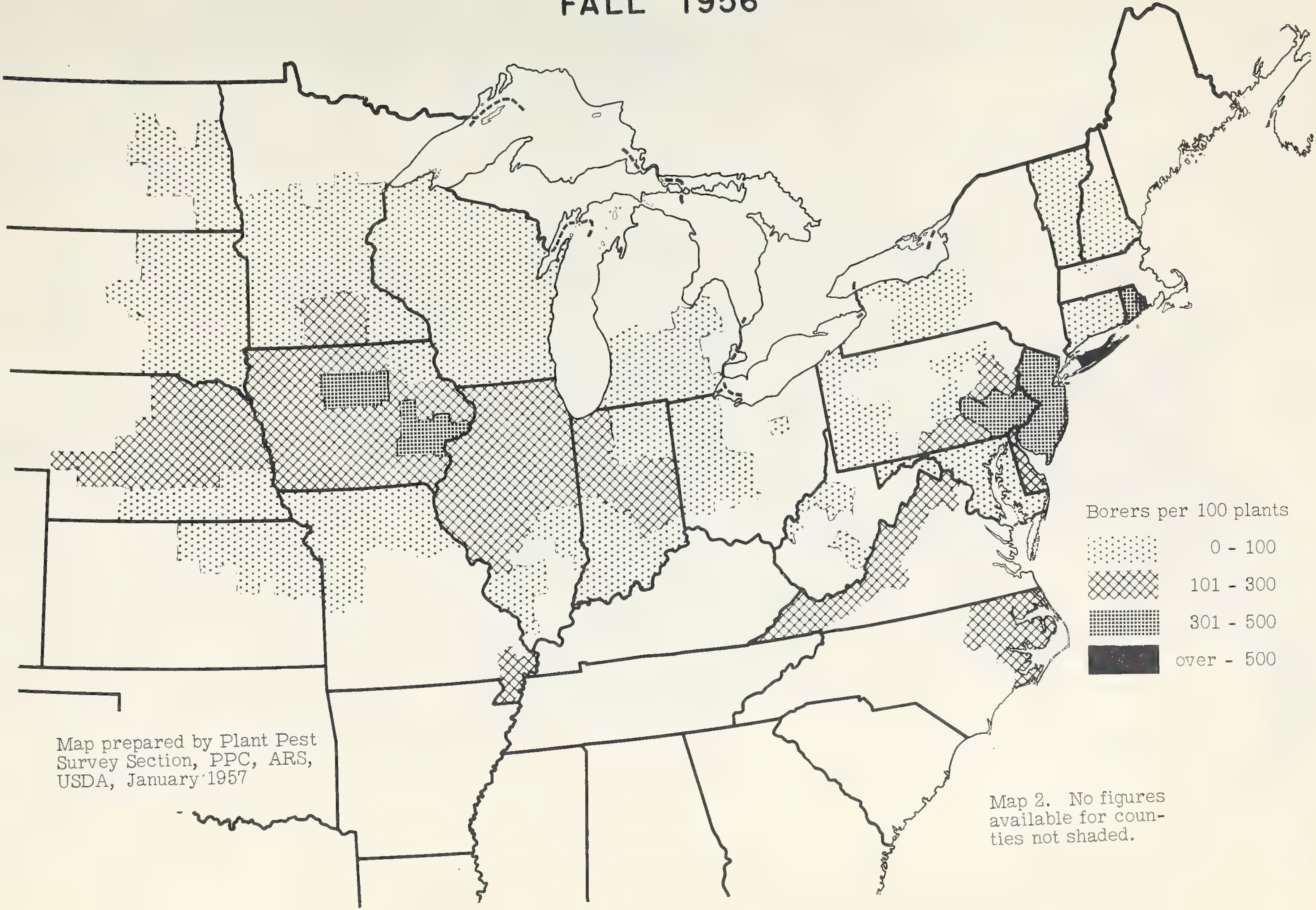


Map prepared by Plant Pest Survey Section, PPC, ARS, USDA, January 1957

Map 1. Districts surveyed. Average number of borers per 100 stalks.

EUROPEAN CORN BORER ABUNDANCE

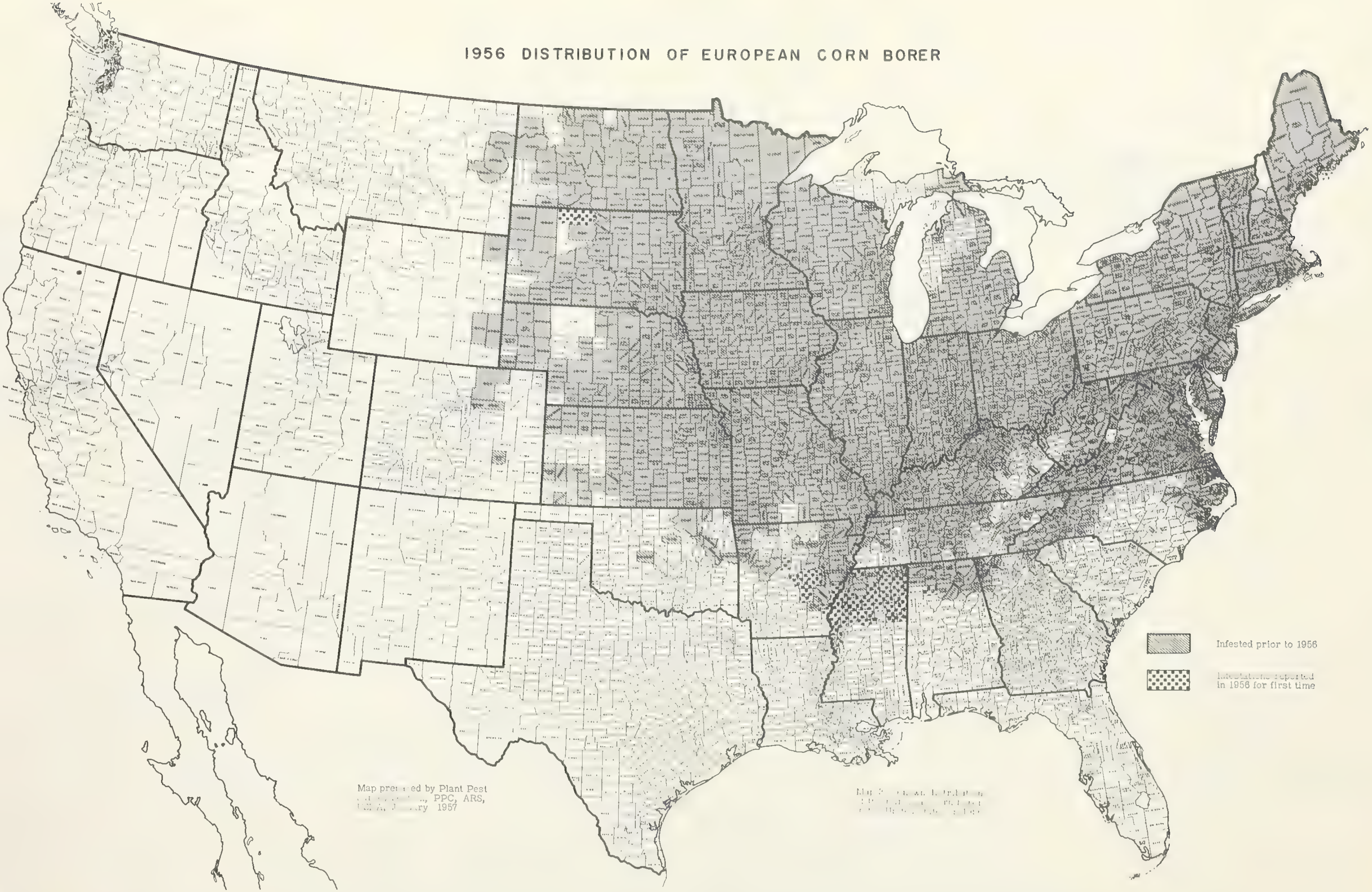
FALL 1956



Map prepared by Plant Pest Survey Section, PPC, ARS, USDA, January 1957

Map 2. No figures available for counties not shaded.

1956 DISTRIBUTION OF EUROPEAN CORN BORER



Map prepared by Plant Pest [illegible], PPC, ARS, U.S.D.A., January 1957

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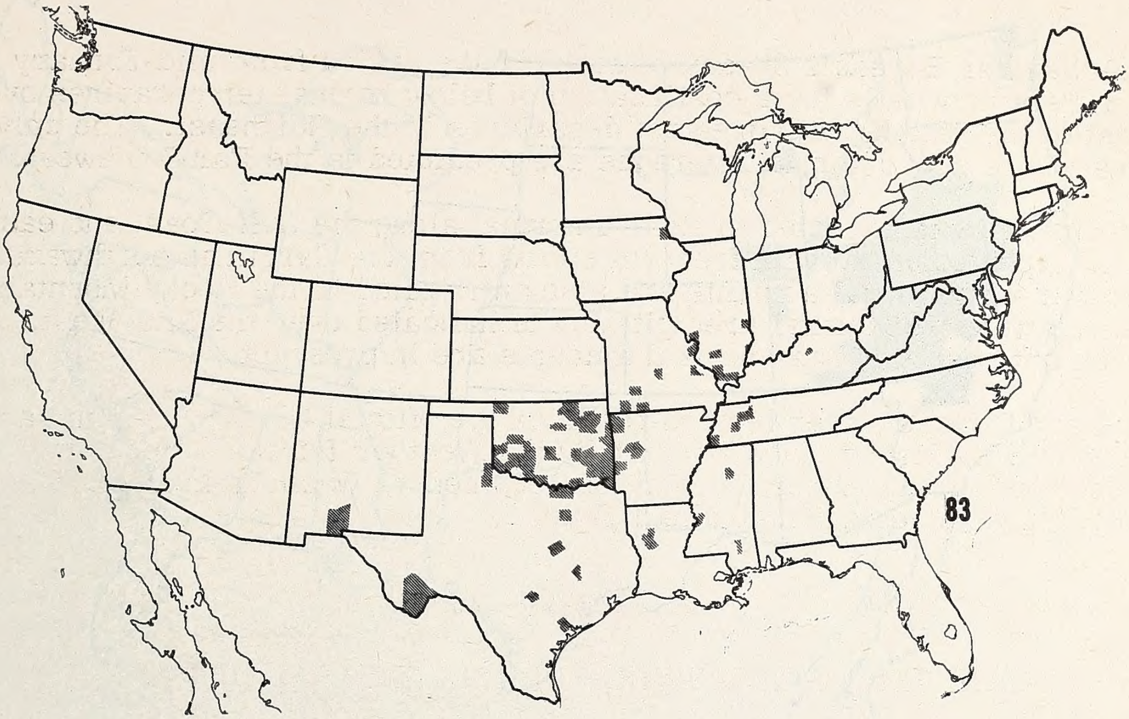
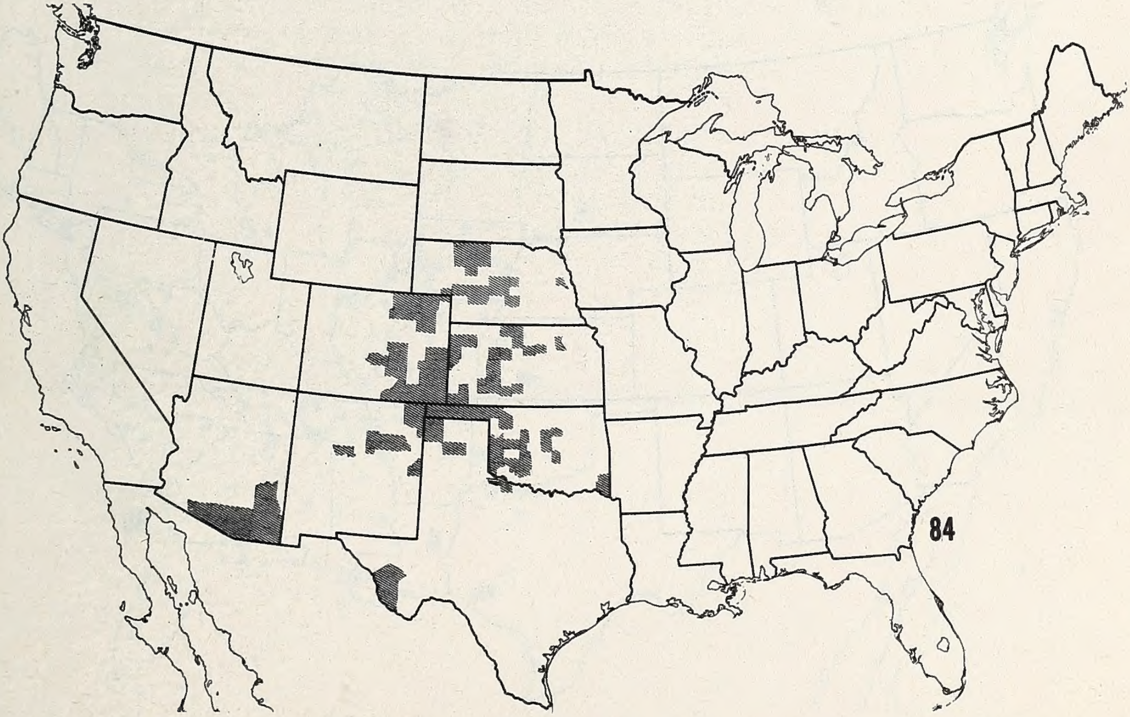
DISTRIBUTION OF RANGE GRASSHOPPERS

Melanoplus ponderosus (Scudder)

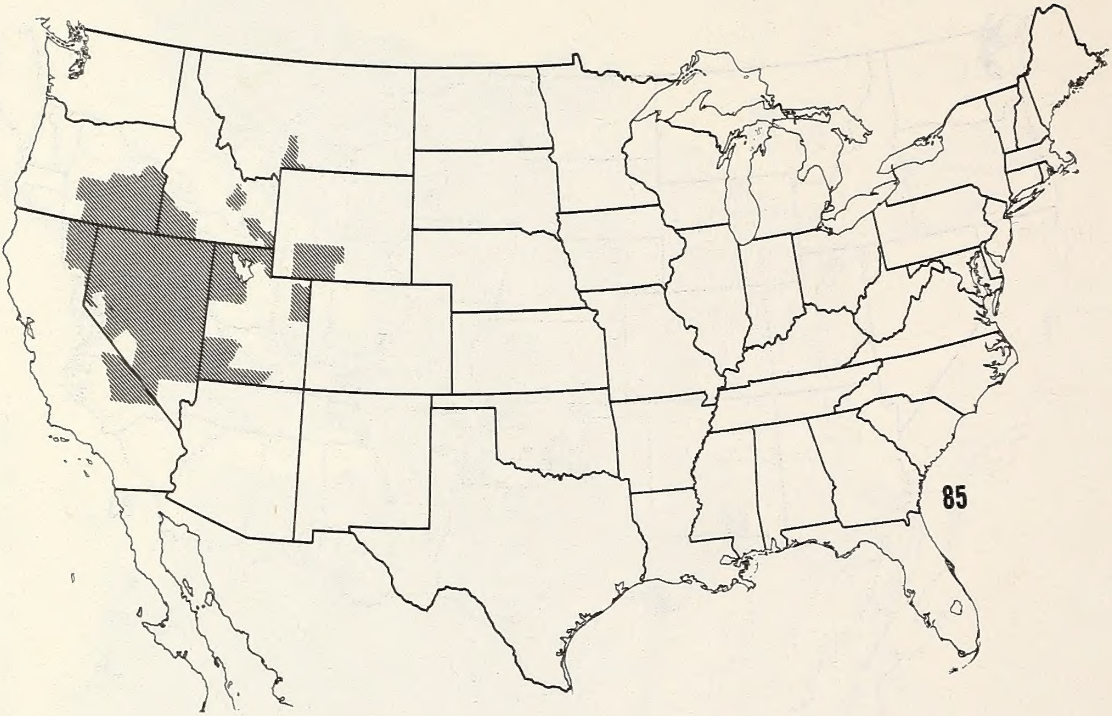


Melanoplus regalis (Dodge)



DISTRIBUTION OF RANGE GRASSHOPPERS

Melanoplus rugglesi Gurney Nevada sage grasshopper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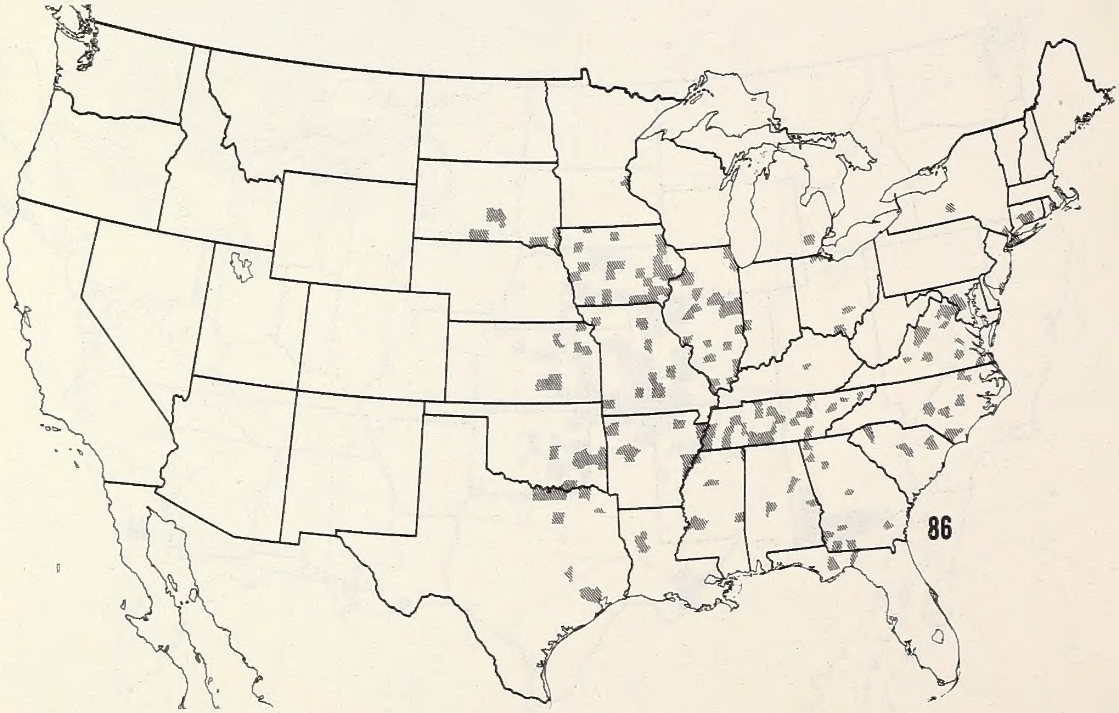
Melanoplus scudderi (Uhler)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